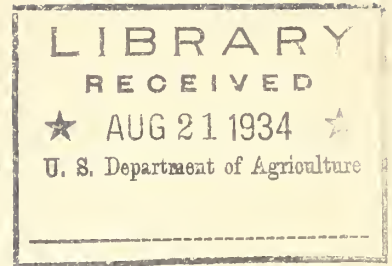


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Do not assume content reflects current scientific knowledge, policies, or practices.



UNITED STATES DEPARTMENT OF AGRICULTURE  
WEATHER BUREAU  
WASHINGTON



Office of the Chief

July 23, 1934.

All Concerned:

The attached sheets carrying changes and corrections to pages 2, 3 and 4 of the Circular, "Instructions Regarding Airways Observations With Relation to Entries on Forms and Use in Sequences and Broadcasts," dated April 28, 1934, is issued for the purpose of clarifying and liberalizing some of the provisions of this Circular, particularly with reference to the taking of special observations. All personnel should carefully compare the new instructions with the old, in order that the changes in the meaning of the revised portions will be clear.

The pages should be substituted for present pages 1, 2, 3 and 4.

Changes indicated will be effective at 0001, E. S. T., August 15, 1934.

A handwritten signature in dark ink, appearing to read "W. R. Gregg". The signature is fluid and cursive, with a large, sweeping "G" at the end.

W. R. Gregg,  
Chief of Bureau.



UNITED STATES DEPARTMENT OF AGRICULTURE  
WEATHER BUREAU  
WASHINGTON

Office of the Chief

April 28, 1934.

CIRCULAR

Instructions Regarding Airways Observations With  
Relation to Entries on Forms and Use in Sequences  
and Broadcasts.

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1. The following is quoted from a Circular, "Accuracy in Airways Observations," dated April 5, 1934:

"Recent comment in newspaper clippings and letters received at the Central Office indicates the desirability of again calling to the attention of all field officials the necessity for unremitting alertness to see that the taking and reporting of airways observations - with specific reference to points where these are made hourly and transmitted by radio or teletype - is carried out in such a manner that all weather changes are promptly and consistently reported. Advice received indicates that at some stations, checks of the weather during the intervals between regular reports are not being made consistently and that the same observations too many times are used for broadcasts of local weather on the half-hour as were taken 40 or more minutes previously even though the weather is decidedly unsettled. An important part of the Weather Bureau service to aviation is the furnishing of accurate and up-to-the minute information as to weather conditions obtaining at any reporting point on an airway and laxity in this respect will inevitably lead to placing the service in disrepute and possibly to very severe and just criticism in case of accidents occurring during adverse weather conditions."

2. In line with this and the need for further emphasizing and clarifying points outlined in the Circular, that Circular is hereby revoked and effective, beginning May 20, 1934, all stations will be governed by the following procedure as regards the taking and recording of airways observations:

3. OBSERVATIONS DEFINED:

- (a) RECORD OBSERVATION; the first observation taken in the hour period, beginning 31 minutes past each hour. This observation will be complete for all elements.

- (b) CHECK OBSERVATION; a check of the visual elements of a report, but using the instrumental readings of the previous RECORD or SPECIAL OBSERVATION. (Although it is entered separately on Form 1130-Aer., it is not to be considered as a separate observation, as it merely brings up to date the visual elements of the previous observations.)
- (c) SPECIAL OBSERVATION; An entirely new observation taken when a marked change in weather conditions occurs. If such a change occurs at the time of the RECORD OBSERVATION, this observation will be designated a "SPECIAL OBSERVATION" for broadcast and transmission purposes.

#### 4. PERIOD BETWEEN TAKING OF OBSERVATION AND ITS USE IN SEQUENCES

##### AND BROADCASTS:

- (a) One RECORD OBSERVATION will be taken each hour at stations where teletype and radio are located during the period these facilities are in operation. The observation shall be the one taken for use in the first sequence or broadcast occurring in the period between 31 minutes past one hour and 30 minutes past the next hour.
- (b) The RECORD OBSERVATION shall be taken within the 5-minute period immediately preceding its placing in the sequence or broadcast in which it is to be used, except that in case special data, such as, mercurial barometer readings, pressure change, clouds, etc., are required, these may be obtained immediately prior to the beginning of this 5-minute period. The use of ceiling balloons will require additional time and this work may be started 15 minutes before the taking of the regular portions of the report.
- (c) At stations where only one sequence occurs each hour and no broadcasts are made, the RECORD OBSERVATION will be the only one to be taken except, of course, that SPECIAL OBSERVATIONS will be taken and reported as required by conditions. In this latter connection, the importance of all personnel being alert to report special observations cannot be overemphasized and Officials in Charge of general supervising stations shall fully instruct all stations that omissions in this regard cannot be tolerated. Failures to

send SPECIAL OBSERVATIONS will be reported immediately to the Central Office for corrective action when in his judgment this is warranted.

(d) At stations located at points where two sequences are run, - one immediately following the other - of which the local observation forms a part of each sequence and is broadcast locally with them, the RECORD OBSERVATION will be taken as directed in (a) above and this will serve, unless changed conditions require a SPECIAL OBSERVATION, for the first sequence and its broadcast and the second sequence. However, just before the broadcast of the second sequence, a CHECK OBSERVATION will be taken and filed for the broadcast if any change has occurred in the visual elements of the report. Changes falling in this category would include appearance of breaks in overcast, change from clear to scattered clouds, reduction or increase of visibility above seven miles, etc. For example, under this plan, at a station where sequences were run at 42 and 52 minutes past the hour, the RECORD OBSERVATION would be taken just prior to the placing of the report in the 42 sequence and a CHECK OBSERVATION taken just prior to the broadcast of the 52 sequence on the hour.

(e) In case three sequences are run and broadcast, the procedure outlined in (d) above will be followed without variation.

(f) In the case of two sequences being run, - with an interval of one sequence between them - the only change in the plan outlined under (d) will be to check the RECORD OBSERVATION as closely as possible to the time of the beginning of the second sequence.

(g) At points where broadcasts of local weather are made at 30 minutes past each hour, a CHECK OBSERVATION will be taken just prior to this.

5. SPECIAL OBSERVATIONS: The foregoing will not eliminate the necessity for maintaining a constant watch of conditions and the SPECIAL OBSERVATIONS be filed when required by changed conditions. In addition to the CHECK OBSERVATION outlined in "4", a SPECIAL OBSERVATION will be taken



Revised August 15, 1934.

and filed without fail whenever the following changes, or combinations of them occur;

(a) Precipitation begins or ends, indicating a change from a period of no precipitation to one with continuous or intermittent precipitation and vice versa. Under showery conditions it will not be necessary to report each beginning or ending, suitable entry concerning such conditions to be made under "remarks" of any observations.

(b) A thunderstorm not previously reported is observed or occurs, or one previously reported shows marked increase in intensity.

(c) A change from clear to broken or from scattered to overcast and vice versa with cloudiness below 10,000 feet, i. e., if the sky is originally clear a special observation will be filed if it becomes broken, if originally scattered a special will be filed if it becomes overcast, or the reverse.

(d) Beginning or ending of fog, and the beginning or ending of dense fog, including dense ground fog.

(e) A marked increase or decrease in the intensity of precipitation occurs, i. e., light to heavy or vice versa. Care should be used in classifying precipitation as "heavy" since it is a common error to mistake "moderate" precipitation as "heavy".

(f) Any change from one to the other of rain, snow, freezing rain, or sleet.

(g) Hail occurs.

(h) A wind-shift line passes the station. (See paragraph 21(d) of Circular N, 1932.)

(i) Tornadoes, sandstorms, etc., are observed.

(j) The ceiling, when originally less than 6000 feet, lowers from one-half to one-third the height, or rises to twice or three times the height given in the previous RECORD or SPECIAL OBSERVATION, except that when the ceiling lowers to below 500 feet or rises above 500 feet a SPECIAL OBSERVATION will be filed.

(k) The visibility, when originally less than 7 miles, lowers to one-half or one-third the distance, or increase to twice or three times the distance given in the previous RECORD or SPECIAL OBSERVATION.

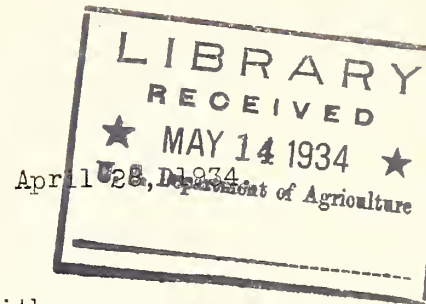
(l) Sudden and marked increases in wind velocity, when the increases are to velocities exceeding 30 miles an hour.



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UNITED STATES DEPARTMENT OF AGRICULTURE  
WEATHER BUREAU  
Washington

Office of the Chief



CIRCULAR

Instructions Regarding Airways Observations With  
Relation to Entries on Forms and Use in Sequences  
and Broadcasts.

1. The following is quoted from a Circular, "Accuracy In Airways  
Observations," dated April 5, 1934:

"Recent comment in newspaper clippings and letters .  
received at the Central Office indicates the desirability  
of again calling to the attention of all field officials  
the necessity for unremitting alertness to see that the  
taking and reporting of airways observations - with  
specific reference to points where these are made hourly  
and transmitted by radio or teletype - is carried out in  
such a manner that all weather changes are promptly and  
consistently reported. Advice received indicates that at  
some stations, checks of the weather during the intervals  
between regular reports are not being made consistently and  
that the same observations too many times are used for  
broadcasts of local weather on the half-hour as were taken  
40 or more minutes previously even though the weather is  
decidedly unsettled. An important part of the Weather  
Bureau service to aviation is the furnishing of accurate  
and up-to-the minute information as to weather conditions  
obtaining at any reporting point on an airway and laxity  
in this respect will inevitably lead to placing the service  
in disrepute and possibly to very severe and just criticism  
in case of accidents occurring during adverse weather con-  
ditions."

2. In line with this and the need for further emphasizing and  
clarifying points outlined in the Circular, that Circular is hereby revoked  
and effective, beginning May 20, 1934, all stations will be governed by the  
following procedure as regards the taking and recording of airways observa-  
tions:

3. OBSERVATIONS DEFINED:

(a) RECORD OBSERVATION; the first observation taken in  
the hour period, beginning 31 minutes past each hour.

This observation will be complete for all elements.

(b) CHECK OBSERVATION; a new observation of the visual elements of a report but using the instrumental readings of the previous RECORD or SPECIAL OBSERVATION.

(c) SPECIAL OBSERVATION; an entirely new observation taken when a marked change in weather conditions occurs.

#### 4. PERIOD BETWEEN TAKING OF OBSERVATION AND ITS USE IN SEQUENCES AND BROADCASTS:

(a) One RECORD OBSERVATION will be taken each hour at stations where teletype and radio are located during the period these facilities are in operation. The observation shall be the one taken for use in the first sequence or broadcast occurring in the period between 31 minutes past one hour and 30 minutes past the next hour.

(b) The RECORD OBSERVATION shall be taken within the 5-minute period immediately preceding its placing in the sequence or broadcast in which it is to be used, except that in case special data, such as, mercurial barometer readings, pressure change, clouds, etc., are required, these may be obtained immediately prior to the beginning of this 5-minute period. The use of ceiling balloons will require additional time and this work may be started 15 minutes before the taking of the regular portions of the report.

(c) At stations where only one sequence occurs each hour and no broadcasts are made, the RECORD OBSERVATION will be the only one to be taken, except, of course, that SPECIAL OBSERVATIONS will be taken and reported as required by conditions. In this latter connection, the importance of all personnel being alert to report special observations cannot be overemphasized and Officials in Charge of general supervising stations shall fully instruct all stations that omissions in this regard cannot be tolerated. Failures to

send SPECIAL OBSERVATIONS will be reported immediately to the Central Office for corrective action when in his judgment this is warranted.

(d) At stations located at points where two consecutive sequences are run, of which the local observation forms a part of each sequence and is broadcast locally with them, the RECORD OBSERVATION will be taken as directed in (a) above and this will serve, unless changed conditions require a SPECIAL OBSERVATION, for the first sequence and its broadcast and the second sequence. However, just before the broadcast of the second sequence, a CHECK OBSERVATION will be taken and filed for the broadcast if any change has occurred in the visual elements of the report. Changes falling in this category would include appearance of breaks in overcast, change from clear to scattered clouds, reduction or increase of visibility above seven miles, etc. For example, under this plan, at a station where sequences were run at 42 and 52 minutes past the hour, the RECORD OBSERVATION would be taken just prior to the placing of the report in the 42 sequence and a CHECK OBSERVATION taken just prior to the broadcast of the 52 sequence on the hour.

(e) In case three sequences are run and broadcast, the procedure outlined in (d) above will be followed without variation.

(f) In the case of two nonconsecutive sequences being run, the only change in the plan outlined under (d) will be to check the RECORD OBSERVATION as closely as possible to the time of the beginning of the second sequence.

(g) At points where broadcasts of local weather are made at 30 minutes past each hour, a CHECK OBSERVATION will be taken just prior to this.

5. SPECIAL OBSERVATIONS: The foregoing will not eliminate the necessity for maintaining a constant watch of conditions and that SPECIAL OBSERVATIONS be filed when required by changed conditions. In addition to the CHECK OBSERVATION outlined in "4", a SPECIAL OBSERVATION will be taken

and filed without fail whenever the following changes, or combinations of them, occur:

(a) Precipitation begins or ends, except that under showery conditions suitable entry of this fact can be made under "Remarks" in the RECORD OBSERVATION. However, if the character of the precipitation under any conditions becomes such as to reduce the ceiling or visibility decidedly, a SPECIAL OBSERVATION will be filed.

(b) The sky becomes broken or overcast below 10,000 feet and it had previously been reported clear or scattered.

(c) A thunderstorm not previously reported is observed or occurs, or one previously reported increases in intensity.

(d) Beginning or ending of fog, and the beginning or ending of dense fog, including dense ground fog.

(e) A marked increase or decrease in the intensity of precipitation occurs, as for example, light to heavy or vice versa.

(f) Any change from one to the other of rain, snow, freezing rain or sleet.

(g) Hail occurs.

(h) A wind-shift line passes the station. (See paragraph 21(d) of Circular N, 1932.)

(i) Tornadoes, sandstorms, etc., are observed.

(j) The ceiling lowers one-half the height or rises to twice the height given in the previous report.

(k) The visibility when originally less than 7 miles lowers to one-half the distance or increases to twice the distance given in the previous report.

(l) Sudden increases in wind velocity, particularly if the increase is to velocities exceeding 30 miles an hour.



(m) Whenever the landing field becomes hazardous for landing under conditions of mud, flood, snow, ice, washouts, etc.

The foregoing will not, of course, cover all conditions under which a SPECIAL OBSERVATION should be filed and this is left to the judgment of the observer as to when this should be done when conditions not specifically covered in the foregoing occur. For example, it is held that a SPECIAL OBSERVATION should be filed if the ceiling should lower from 1000 to say 600 feet, but not reaching 500 feet, even though this is not specifically covered above, etc. The intention is that any change of meteorological importance will be reported as soon as it occurs.

6. TIME OF OBSERVATION: (a) The time given to any observation at points where teletype and radio are located and hourly observations are taken throughout the 24 hours or any portion of them, will be the time of the beginning of the sequence or broadcast in which it is first used. For example, if used first in the sequence beginning at 3:42 a.m., it will be given the time of 0342ES (CS, MS, PS.)

(b) Observations will be timed on the 24-hour clock basis just as now is in general usage on all teletype circuits.

(c) At points from which observations are telephoned or telegraphed to another point to be placed in the sequences, the "time of observation" will be that of the filing of the message.

(d) At points forwarding 4-hourly reports by telegraph or telephone, the "time of observation" will be 45 minutes past the local hours corresponding to 3, 7 and 11, a. m. and p. m., E. S. T.

7. Terminal stations will see to it that the weather observations of that station broadcast at any time shall not have been taken or completely checked more than 15 minutes prior to the beginning of the broadcast, i. e., RECORD OBSERVATIONS or CHECK OBSERVATIONS broadcast at any point shall have

been taken within 15 minutes of all broadcast schedules. This is not a repetition of instructions given in paragraph "4", except in case those instructions cover all cases at particular stations.

8. ENTRY OF DATA ON FORM 1130-AER: All RECORD, CHECK and SPECIAL OBSERVATIONS will be entered in chronological order on Form 1130-Aer. In order that the CHECK OBSERVATION, as required under paragraph 4, may be indicated, the RECORD OBSERVATION will be entered with its proper time and immediately below this will be entered the CHECK OBSERVATION with the time. In case the data in both observations are the same, this fact will be indicated by use of ditto marks. If differing, the proper data will be entered. For example:

WA 1142ES 1500 OVC 8 LGT RAIN... (RECORD OBSERVATION)

WA 1200ES " " " " " ... (CHECK OBSERVATION)

WA 1230ES 1200 " 6 " " HAZY (CHECK OBSERVATION)

The RECORD OBSERVATION will be entered in English in full and the use of symbols is not authorized on this form. When a SPECIAL OBSERVATION is taken this will also be entered in full, and will be followed by a CHECK OBSERVATION at ensuing checking periods in the hour in place of the RECORD OBSERVATION which it has supplanted. For example:

WA 1142ES 1500 OVC 8 LGT RAIN... (RECORD OBSERVATION)

SPL WA 1150ES 600 OVC 2 HVY RAIN... (SPECIAL OBSERVATION)

WA 1200ES " " " " " ... (CHECK OBSERVATION)

SPL WA 1210ES 1000 OVC 5 LGT RAIN... (SPECIAL OBSERVATION)

WA 1230ES " " 7 " " ... (CHECK OBSERVATION)

The Official in Charge of airport and first-order stations furnishing reports on an hourly basis shall inspect the Forms daily to see that the above program is carried out. If it is indicated from such inspections that observations are not made as required or that other laxity in the carrying out of the program is evident, he shall inquire into the circumstances thoroughly and

caution the observer or observers responsible if necessary. Repeated laxity in this respect upon the part of any of the personnel shall be called to the attention of the Central Office for action. If the fault lies with Department of Commerce personnel who may be making all or a part of the observations, the matter should be reported to the Central Office for reference to the proper office of that Department.

9. ENTRIES OF DATA ON FORMS 1136-1140-AER: (a) At hourly reporting points, data taken from the RECORD OBSERVATION for each hour will be entered on Forms 1136-1140. This observation falls between 31 minutes past one hour and 30 minutes past the next hour and data will be entered in the hour columns corresponding to first hour. For example, if the RECORD OBSERVATION is made for a sequence beginning at 2:02 a. m., this will fall between 31 minutes past 1 a. m. and 30 minutes past 2 a. m., and data would be entered in the hour columns headed "1:01a. to 2:00a" on Forms 1136-1140.

(b) Entries at stations taking and filing only 4-hourly observations will be made in the hour column corresponding in local time to the regular 4-hour period, i. e., 3:01 to 4:00 and 7:01 to 8:00 a. m. and p. m., and 11:01p. to Midnight and 11:01a. to Noon, E. S. T.

(c) Paragraphs 12, 13, 12, 9 and 8 of instructions on Forms 1136, 1137, 1138, 1139 and 1140, respectively, are hereby amended in accordance with the foregoing.

The plan outlined above will, it is believed, assure the desirable end of having a synoptic entry of data on these Forms over the entire country.

10. FURNISHING OF OBSERVATIONS TO DEPARTMENT OF COMMERCE PERSONNEL FOR TRANSMISSION OR BROADCASTING: (a) At points where the observations are taken by Weather Bureau personnel and given to the Commerce personnel for placing on the teletype or radio when sequences are run, or for broadcasting, arrangements will be made in each case whereby the Commerce personnel are advised of



any change in the observation subsequent to its being given to them. To do this, the RECORD OBSERVATION will be written out properly in symbols and given to the Commerce personnel. This writing out should be done on scratch pads or on scratch copies of Forms 1130 and should be complete for the day. If then (assuming that conditions do not change in such a manner as to require a SPECIAL OBSERVATION,) any change from the RECORD OBSERVATION is recorded on the official Form 1130 at the checking period, or periods, the CHECK OBSERVATION will be written out in symbols below the previous observation on the scratch pad or Form and given to the Commerce personnel for use in lieu of the RECORD OBSERVATION. The same procedure would be used in the case that a SPECIAL OBSERVATION had already been filed for use in lieu of the RECORD OBSERVATION, except that the CHECK OBSERVATION would be used in lieu of the SPECIAL OBSERVATION.

(b) If no change has occurred, the Commerce personnel will be notified of this fact by giving them the station designator, the new time and indicate by the use of ditto marks that the previous observation still applies. The Commerce personnel will then continue the use of the observation previously given them.

11. MAKING OF CHECK OBSERVATIONS: The CHECK OBSERVATION need not include psychrometric, barometric, temperature, or wind readings unless there is a good reason to believe that a decided change has occurred in these. It will, however, in all cases include a thorough check of the visual elements of the report in current use, i. e., the ceiling, sky, weather, obstructions to vision, visibility, field condition, and remarks pertaining to these, will be checked against those given in the RECORD or SPECIAL OBSERVATION in current use and if changes have occurred, they will be entered and used in subsequent sequences and broadcasts to which they apply. The CHECK OBSERVATION will be taken from the regular observation point, i. e., it will be taken in the same

manner as the taking of a RECORD or SPECIAL observation. Cursory inspection of conditions through the office windows will not be considered as being a proper CHECK OBSERVATION.

12. The personnel of any station charged with the responsibility of furnishing RECORD, SPECIAL and CHECK observations, shall be awake and alert at all times, particularly at night.

13. REPORTING OF LAXITY IN OBSERVATIONAL WORK AT INTERMEDIATE STATIONS:

If laxity in the observational work at any Weather Bureau intermediate point becomes apparent, the general supervising official for the airway will take the matter up with the direct supervising station for corrective action, or direct with the airways observers if the general supervising station is also the direct supervising station. If a station manned by Department of Commerce employees is involved, the general supervising station will take the matter up with the Central Office where it will be taken up with the Department of Commerce.

14. The instructions contained herein shall be faithfully carried out at all stations concerned. Their purpose is to bring up and maintain the service at the highest possible standard at all stations. Any points which are not clearly understood should be referred to the Central Office for explanation.

15. The cooperation of all the personnel involved is requested and expected.

W. R. Gregg,  
Chief of Bureau.

